**Network Architecture & Infrastructure Exam Cheat Sheet**

**1. IP Conflict**

* **What it is:** Same IP assigned to 2+ devices.
* **Causes:** Duplicate static IP, DHCP misconfig, rogue device.
* **Effects:** Devices lose connectivity, unstable network, and app failures.
* **Fix:**
  + Detect (ipconfig, arp -a, ping).
  + Change one device’s IP / adjust DHCP scope.
  + Document & monitor.
* **Load balancing:** Distributes traffic across servers/links (DNS RR, hardware, software LB).

**2. NAS, SAN, RAID, Secure Network**

* **NAS:** File-level storage via Ethernet (SMB/NFS).
* **SAN:** Block-level storage via Fibre Channel/iSCSI (high performance).
* **RAID:**
  + 0 = speed (no redundancy)
  + 1 = mirroring (redundancy)
  + 5 = striping + parity (balance)
  + 10 = mirror + stripe (best).
* **Network planning:** Define needs → design topology → IP & VLAN plan → security (firewall, ACLs) → redundancy → monitoring.

**3. Network Handling (Security Procedures)**

* Access control (AAA).
* Patch management.
* VLAN segmentation.
* IDS/IPS monitoring.
* Backups of configs/data.
* Incident response plan.

**4. Networking Tools**

* ipconfig – IP, gateway, DNS (Win).
* ping – Test host reachability.
* nslookup – DNS troubleshooting.
* tracert – Path packets take.
* netstat – Active connections.
* arp -a – IP–MAC mapping.

**5. Windows Server 2019 Installation + Config**

* Boot from ISO → Install edition → Partition → Set Admin password.
* Post-install configs:
  + Rename server.
  + Assign **static IP** (IP, Subnet, Gateway, DNS).
  + Enable Remote Desktop.
  + Install roles (DNS, DHCP, AD).

**6. DNS Installation & Zones**

* Install via **Server Manager → DNS role**.
* **FLZ (Forward Lookup Zone):** Name → IP.
* **RLZ (Reverse Lookup Zone):** IP → Name.
* Zone types: Primary (writable), Secondary (copy), Stub (reference).

**7. DHCP Installation & Scope**

* Install via **Server Manager → DHCP role**.
* Authorize in AD (if domain-joined).
* Configure **Scope:**
  + Range: e.g., 192.168.1.50–192.168.1.200.
  + Subnet mask: 255.255.255.0.
  + Exclusions: servers, printers.
  + Lease: default 8 days.
  + Options: Gateway, DNS, Domain.